EMPIRE GENOMICS

FISH PROBES

HIGH QUALITY, CUSTOMIZED, ACCURATE

Fluorescence in situ hybridization (FISH) is a molecular diagnostic technique utilizing labeled DNA probes to detect or confirm gene or chromosome abnormalities; often used in oncology decision-making.

Our FISH probes offer:

- Full customization (dye, fusions, quantity)
- GMP manufacturing standards
- High sensitivity & specificity
- Superior quality testing
- Easy to follow standard protocols
- Rapid turnaround time-as soon as 7 days on custom probes
- Money back guarantee

Below please find a sample of our FISH probe library by disease:

~ Solid Tumor Pathology ~

- **Lung Cancer**

* NTRK1 (1q23)
* ALK (2p23)
* VHL (3p25)
* PIK3CA (3q26)
* FGFR3 (4p16.3)
* PDGFR-α (4q12)
* TERT (5p15.33)
* NPM1 (5q35)
* PHF1 (6q21.3)
* EGFR (7p11)
* MET (7q31.2)
* FGFR1 (8p11.23-p11.22)
* PREX2 (8q13)
* RET (10q11)
* FGFR2 (10q26)
* WT1 (11p13)
* CCND1 (11q13)
* CDK4 (12q13)
* AKT1 (14q32)
* BCL2 (18q21.3)
* EML4/ALK (2p21/2p23)
* CREB1 (2q34)
* WWTR1 (3q25.1)
* TP63 (3q28)
* KIT (4q12)
* VEGFR2 (4q12)
* CD74-ROS1 (5q33/6q22)
* GOPC (6q21)
* ROS1 (6q22)
* NCF1 (7q11.23)
* BRAF (7q34)
* FGFR1 (8p12)
* KIF5B-RET (10p11-q11)
* PTEN (10q23)
* WT1 (11p13)
* MAML2 (11q)
* KRAS (12p12)
* HMGA2 (12q15)
* HER2 (17q12)
* TFE3 (Xp11)

ENABLING PERSONALIZED MEDICINE

- **Nodular fasciitis / Aneurysmal Cyst**

  * USP6 (17p13)

- **Alveolar Rhabdomyosarcoma (ARMS)**

  * CCND1 (11q13)
  * FOXO1 (13q14)
  * CDK4 (12q13)

- **Bladder Cancer**

  * CEP 3, 7, 17
  * KIT (4q12)
  * PDGFRB (5q32)
  * FGFR1 (8p11.23-p11.22)
  * FGFR2 (10q26)
  * CDKN2D (19p13)
  * TP63 (3q28)
  * FGFR3 (4p16.3)
  * RREB1 (6p24)
  * p16 (9p21)
  * CDK4 (12q13)

- **Breast Cancer**

  * REL (2q16)
  * WWTR1 (3q25.1)
  * PHF1 (6q21.3)
  * NCF1 (7q11.23)
  * FGFR1 (8p11.23-p11.22)
  * PREX2 (8q13)
  * FGFR2 (10q26)
  * BIRC3 (11q22)
  * CDK4 (12q13)
  * NTRK3 (15q25)
  * CEP 17
  * TOP2A (17q21)
  * CIC (19q13.2)
  * PDGFB (22q13)
  * CREB1 (2q34)
  * TERT (5p15.33)
  * MYB (6q22-q23)
  * MET (7q31.2)
  * NCOA2 (8q13)
  * PTEN (10q23)
  * CCND1 (11q13)
  * CHEK1 (11q24.2)
  * HMGA2 (12q15)
  * MAF (16q22-q23)
  * HER2 (17q12)
  * BCL2 (18q21.3)
  * ZNF217 (20q13)
  * XIST (Xq13.2)

- **Colorectal Cancer**

  * WWTR1 (3q25.1)
  * NCF1 (7q11.23)
  * PREX2 (8q13)
  * ZNF217 (20q13)
  * PHF1 (6q21.3)
  * MET (7q31.2)
  * CHEK1 (11q24.2)

- **Cervical Cancer**

  * WWTR1 (3q25.1)
  * MYB (6q22-q23)
  * MAML2 (11q)
  * PDGFRA (4q12)
  * MET (7q31.2)
  * BCL2 (18q21.3)

- **Ewing Sarcoma**

  * EWSR1 (22q12)

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- **Fibrosarcoma**

  * COL1A1/PDGFB t(17;22)(q21.3;q13.1)

- **GIST**

  * KIT (4q11-q12)
  * BRAF (7q34)
  * YWHAE (17p13)
  * PDGFRA (4q12)
  * KRAS (12p12.1)
  * ZNF217 (20q13)

- **Glioma**

  * 1p/19q
  * PDGFRB (5q32)
  * SMARCB1 (22q11)
  * TERT (5p15.33)
  * ROS1 (6q22)
  * PDGFB (22q13)

- **Liver Cancer**

  * TERT (5p15.33)
  * NCF1 (7q11.23)
  * PREX2 (8q13)
  * PHF1 (6q21.3)
  * MET (7q31.2)
  * YWHAE (17p13)

- **Melanoma**

  * KIT (4q12)
  * RREB1 (6p24)
  * PREX2 (8q13)
  * BCL2 (18q21.3)
  * TERT (5p15.33)
  * MAGI2 (7q21)
  * CDK4 (12q13)

- **Myxoid Liposarcoma**

  * DDIT3 (12q13)
  * HMGA2 (12q15)

- **Neuroblastoma**

  * NTRK1 (1q23)
  * MYC (8q24)
  * NTRK3 (15q25)

- **Ovarian Cancer**

  * GOPC (6q21)
  * WT1 (11p13)
  * CHEK1 (11q24.2)
  * HMGA2 (12q15)
  * CDKN2D (19p13)
  * ZNF217 (20q13)
  * XIST (Xq13.2)

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FISH PROBES

- **Prostate Cancer**

* HPC1 (1q24-25)
* CENPF (1q41)
* CREB1 (2q34)
* ETV5 (3q27)
* NCF1 (7q11.23)
* MET (7q31.2)
* HGF (17q21.1)
* PREX2 (8q13)
* ETV6-RUNX1 (12p13/)(21q22)
* MAF (16q22-q23)
* BCL2 (18q21.3)
* PHF1 (6q21.3)
* ETV1 (7p21)
* MAGI2 (7q21)
* MET (7q31.2)
* NCOA2 (8q13)
* MSR1 (8p22)
* FOXM1/CENPF(12p13.3/1q41)
* ELAC2 (17p12)
* TMPRSS2 (21q22.3)

- **Renal Cell Carcinoma**

* mTOR (1p36)
* TFEB (6p21)
* MET (7q31.2)
* FLCN (17p11)
* SMARCB1 (22q11)
* VHL (3p25)
* c-MET (7q31)
* HIF1A (14q23)
* YWHAE (17p13)

- **Round Cell Sarcoma**

* WT1/EWSR1 (11p13/22q12.2)
* CIC (19q13.2) (Adult and Pediatric)

- **Skin Cancer**

* KIT (4q12)
* RREB1 (6p24)
* CDK4 (12q13)
* PDGFB (22q13)
* PDGFRA (4q12)
* JAK2 (9p24)
* SMARCB1 (22q11)

- **Smooth Muscle Tumors**

* HMGA2 (12q14)

- **Stomach Cancer**

* PDGFRA (4q12)
* JAK2 (9p24)
* NTRK3 (15q25)
* MET (7q31.2)
* YWHAE (17p13)
* ZNF217 (20q13)

- **Synovial Sarcoma**

* SS18 (18q11)

ENABLING PERSONALIZED MEDICINE

EMPIRE GENOMICS

FISH PROBES

- **Testicular Cancer**

  * PDGFRA (4q12)
  * CDK4 (12q13)
  * CDKN2D (19p13)
  * XIST (Xq13.2)

- **Thyroid Cancer**

  * NTRK1 (1q23)
  * PDGFRA (4q12)
  * PAX8/PPARG (2q13/3p25)
  * KIT (4q12)

- **Uterine Cancer**

  * KIT (4q12)
  * BIRC3 (11q22)
  * BCL2 (18q21.3)
  * MYB (6q22-q23)
  * YWHAE (17p13)
  * XIST (Xq13.2)

- **Vascular Tumors**

  * CAMTA1/WWTR1

- **Wilms Tumor**

  * WT1 (11p13)
  * HMGA2 (12q14)
  * NTRK3 (15q25)
  * SMARCB1 (22q11)

ENABLING PERSONALIZED MEDICINE

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~ Hematopathology ~

FISH PROBES

- **Multiple Myeloma (MM)**

  * CDKN2C/CKS1B (1p/1q)
  * FGFR3 (4p16)
  * CEP 7, CEP 9, CEP 11, CEP 17
  * BIRC3 (11q22)
  * RB1 (13q14)
  * IGH (14q32.33)
  * MAF (16q22-q23)
  * TP53 (17p13)
  * CIC (19q13.2)
  * BRD4 (19p13.12)

  IGH reflex

  * FGFR3/IGH t(4;14)
  * CCND1/IGH t(11;14)
  * IGH/MAF t(14;16)

- **Acute Lymphoblastic Leukemia (ALL)**

  Adult

  * MYB/CEP 6 (6q23 del)
  * ABL1 (9q34.1)
  * BCR/ABL1 t(9;22)
  * BCR/ABL with ASS1 t(9;22)
  * PAX5 (9p13.2)
  * CDKN2A/CEP 9 (9p21.3 del)
  * JAK2 (9p24)
  * MLL (11q23)
  * EPOR t(14;19)(q32;p13.1)
  * IGH (14q32.33)
  * 21q (21q22.13-q22.2)

  Pediatric

  * CEP 4, CEP 10, CEP 17
  * ABL1 (9q34.1)
  * BCR/ABL1 t(9;22)
  * BCR/ABL with ASS1 t(9;22)
  * CDKN2A/CEP9 (9p21.3 del)
  * MLL (11q23)
  * ETV6/RUNX1 t(12;21)
  * IGH (14q32.33)

- **Acute Lymphocytic Leukemia**

  * BCL2 (18q21.3)

- **Acute Myelogenous Leukemia (AML)**

  * MECOM (3q26.2)
  * DEK/NUP214 t(6;9)(p22;q34)
  * RUNX1T1/RUNX1 t(8;21)
  * PML/RARA t(15;17)
  * KIT (4q12)
  * FGFR1 (8p11.2)
  * BCR/ABL with ASS1 t(9;22)
  * CBFB inv(16), t(16;16)

- **Acute Myelomonocytic Leukemia**

  * MECOM (3q26.2)
  * Del20q/20p

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- **Acute Myeloid Leukemia**

  * MECOM (3q26.2)
  * TERT (5p15.33)
  * MYB (6q22-q23)
  * RREB1 (6p24)
  * NCOA2 (8q13)
  * WT1 (11p13)

- **Acute Promyelocytic Leukemia**

  * CHEK1 (11q24.2)
  * PML/RARA t(15;17)
  * RARA (17q21)

- **Burkitt Lymphoma**

  * IGH/MYC/CEP 8 t(8;14)
  * MYC (8q24)

- **Chronic Lymphocytic Leukemia (CLL)** **IGH reflex**

  * BIRC3 (11q22)
  * ATM (11q22.3 del)
  * CEP 12 (trisomy 12)
  * D13S319 (13q del)
  * RB1 (13q14 del)
  * IGH (14q32)
  * TP53 (17p13.1)
  * BCL2 (18q21.3)

  * CCND1/IGH t(11;14)
  * IGH/BCL2 t(14;18)

- **Chronic Myelogenous Leukemia (CML)**

  * MYB (6q22-q23)
  * BCR/ABL with ASS1 t(9;22)

  * BCR/ABL1 t(9;22)
  * ABL1 (9q34.1)

- **Follicular Lymphoma (FL)**

  * IGH/BCL2 t(14;18)

- **Large B-Cell Lymphoma (LBCL)**

  * BCL6 (3q27)
  * BCL2 (18q21.3)

- **MALT Lymphoma**

  * IGH (14q32.33)
  * MALT1 (18q21)
  * BCL2 18q21.3

ENABLING PERSONALIZED MEDICINE

- **Mantle Cell Lymphoma (MCL)**

  * BIRC3 (11q22)
  * CCND1/IGH t(11;14)
  * IGH (14q32.33)

- **Myelodysplastic Syndrome (MDS)**

  * -5/5q- (5q31 del)
  * CEP 8 (trisomy 8)
  * MLL (11q23)
  * -7/7q- (7q31 del)
  * CEP 9 (trisomy 9)
  * 20q- (20q12 del)

- **Myeloid Neoplasms with Eosinophilia**

  * PDGFRA/CHIC2/FIP1L1 (4q12)
  * PDGFRB (5q33)
  * FGFR1 (8p12)

- **Myeloproliferative Neoplasms (MPN)**

  * -5/5q- (5q31 del)
  * CEP 8 (trisomy 8)
  * RB1 (13q14 del)
  * -7/7q- (7q31 del)
  * CEP 9 (trisomy 9)
  * 20q- (20q12 del)

- **Non – Hodgkin Lymphoma**

  * 11q23.3 – 11q24
  * IGH (14q32.33)
  * BCL2 (18q21.3)

- **NUT Midline Carcinoma**

  * NUT/BRD4 (15q14/19p13.1)

- **T-cell Leukemia/Lymphoma**

  * FGFR3 t(4p16.3)
  * FGFR1 t(8p11.2)
  * Isochromosome 7q
  * TRA (14q11.2)

- **Lymphoma Probes**

  * MALTA1 (1p/1q)
  * DUSP22 t(6;7) (p25.3;q32.3)
  * CCND1/IGH t(11;14)
  * BCL6 (14q32)
  * ALK (2p23)
  * MYC/IGH t(8;14)
  * IGH/BCL2 t(14;18)

- **Transplant**

  * XX/XY for sex mismatched transplants

(주) 바이오디
(우.14322) 경기도 광명시 하안로 60 광명SK테크노파크 A동 1102호
T_ 02.6264.3399 F_ 02.6264.3400 E_ order@bio-d.co.kr
검색창 "바이오디" 검색
www.bio-d.co.kr